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FIELD COLUMBIAN MUSEUM

PUBLICATION 39.

BOTANICAL SERIES. VOL. I, No. 5.

STUDIES IN THE HERBARIUM.

I.

HIGINBOTHAMIA,

A NEW GENUS, AND OTHER NEW DIOSCOREACEÆ.

NEW AMARANTHACEÆ.

BY

EDWIN B. ULINE, PH.D.

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CHICAGO, U. S. A.

August, 1899.

STUDIES IN THE HERBARIUM. I.

BY

EDWIN B. ULINE, PH.D.

In looking over the *Amaranthaceæ* and *Dioscoreaceæ* of Dr. C. F. Millspaugh's recent Yucatan and West Indian collections with a view to determining those families for publications now in preparation, a number of new forms in the museum herbarium came under my notice, some of which proved so interesting that it was thought fit to prepare them separately for immediate publication. The results further confirm the opinion of the writer, acquired during a considerable special study of both families, that we are yet a long way from a final clear understanding of the real relationships existing in these two difficult groups.

I acknowledge with pleasure the many helpful suggestions for which I am indebted to Dr. Millspaugh, and the kindness of Mr. Lansing, of the Department of Botany, in the preparation of the drawings.

DIOSCOREACEÆ.

A glance at the few representatives of *Dioscoreaceæ* in the Herbarium at the Field Columbian Museum gives added confirmation to the testimony of all who have made a special study of the group, *i. e.*, that our knowledge not only still is, but must long remain very incomplete unless collectors may be induced to interest themselves in the group more than they have done in the past. In the set before me, as has nearly always been the case heretofore, one or the other of the two sex-forms is too often missing. A long study of the family, and especially of the genus *Dioscorea*, has convinced the writer that the staminate flower characters alone, constant and pronounced as they are for the determination of specific limits, can never be of much generic value in rescuing the group from its present unsatisfactory condition. The key to the problem will therefore only be found

after we have acquired a better knowledge of pistillate forms. It is earnestly to be desired that this phase of the Dioscorea problem be attacked by the only persons who are capable of doing so, *i. e.*, by intelligent field workers. Nothing more is necessary than the simple recognition of the fact that Dioscoreas are diœcious, in order that the discovery of a plant in any locality may thereby stimulate the collector to a search in the immediate neighborhood for the opposite sex-form. In this way alone will it ever be possible to bring together requisite material for a complete and satisfactory study.

The most recent publication on the family is in Engler & Prantl Pflanzenfamilien, Nachtrage zu II. 5, pp. 80—89, where the writer has presented a detailed synopsis of sections in the genus *Dioscorea*, preliminary to a monograph of the family, which has unfortunately not yet passed the MS. stage.

HIGINBOTHAMIA* Uline, n. gen. Ovarium capsulaque *Dioscoreœ*, ovulis quaternis, seminibus in quolibet loculo ternis quaternisve. Cotyledon obscuro repando-marginata. Ex habitu totæ plantæ et characteribus florum staminatorum a *Dioscorea* non præcipue differt.

The presence of three and sometimes four fully ripe seeds in each cell of the capsule must at once entitle the plant in question to a special degree of consideration as a form at once distinct, not only from all Dioscoreas, but from the entire sub-order of *Dioscoreœ*, as set apart by Pax in the Pflanzenfamilien II, 5, 133. So far as I have been able to discover after a three years study of the family, during which time all the larger collections of European and American herbaria have been examined, not a single specimen has hitherto come to light presenting this character. It seems probable, therefore, that we are dealing, not with some spasmodic or abnormal condition, but with a deep-seated character, which may, as the group becomes better known, be of no little value in the determination of generic lines. Like most other members of the sub-order *Dioscoreœ*, the general habit cuts no figure; for without fruit or flower it could not readily be distinguished from a score of others. The staminate flowers are easily distinguished from all Mexican *Dioscoreœ* by the stamen

* Harlow N. Higinbotham, Esq., whose interest in the development of botanical research has given a strong impetus toward proper equipment for a representative and critical herbarium in the Botanical Department of the Field Columbian Museum.

PL. XXII. HIGINBOTHAMIA SYNANDRA ULINE.

1. Habit, showing part of stem and one leaf with its staminate racemes.
2. Staminate flower, enlarged, with three sepals turned down.
3. Androecial column, anthers and alternating staminodia.
4. Style and stigmatic surfaces, effete anthers at base.
5. Fruit, natural size, showing contents of two cells.
6. Embryo, anterior and lateral views, magnified.

(See page 415.)

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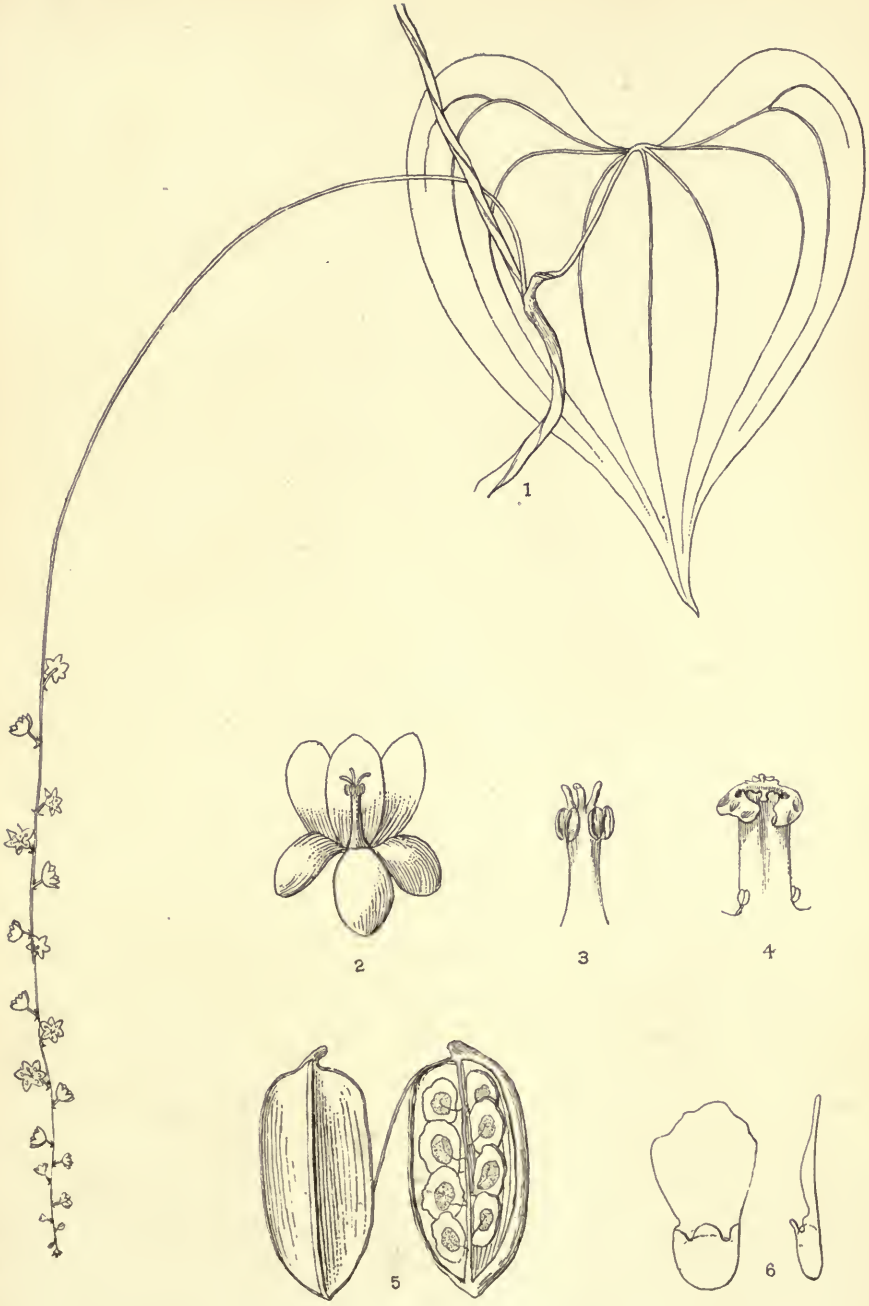
(See page 415.)



HIGINBOTHAMIA SYNANDRA, Uline.

column. Members of the section *Monadelpha* Uline, of the genus *Dioscorea*, occurring in southern Brazil, Paraguay, Argentina and Bolivia, are variously inclined to coalescent filaments, but their seeds are of the *Helmia* type, *i. e.*, winged only in one direction, instead of all around. Although the coalescence of the *Monadelpha* section is characteristically different from that of our plant, it does not follow that the character of filament coalescence may in the above-described plant be interpreted as a generic character. For throughout the genus *Dioscorea*, species showing closest relationship in the character of the female flowers were found often to differ widely in their staminate flowers. Hence it is not improbable that a second species displaying 12 ovules in the capsule, should such ever be found, might display an entirely different set of characters in its male form from that below described. Furthermore, there are certain characters in our plant, which, while not found in any known *Dioscorea* species, nevertheless do not differ more widely from known Dioscoreas than numerous sections of the genus *Dioscorea* differ among one another. Such characters are: the presence of staminodia carried up to the apex of the column with the anthers (members of the section *Monadelpha* having no staminodia); the very long rachides of the pistillate flowers (often over 2 feet); and the very minute embryo with the obscure plumule at the base. (This plumular structure required hours of manipulation to discover, while in other members of the family it is always easily seen under $\frac{2}{3}$ to $\frac{1}{4}$ objective comp. micr.). In view of these conditions the writer is therefore compelled to present the genus tentatively, offering the 4-ovuled feature as the only positive generic character. To what extent certain of the above-mentioned characters may be ultimately found to be generic or specific, must remain an open question until more is known about generic relations in the group.

Higinbothamia synandra Uline, n. sp. (Plate XXII.)

Planta glabra, scandens, caulibus crassis, sinistrorsum tortis; foliis membranaceis, 7-nerviis, orbiculari-cordatis, subtus ad basin glandulis sparsis adspersis; racemis solitariis, gracillimis, folia superantibus; floribus solitariis brevipedicellatis, ad racemos laxiter dispositis; antheris tribus sordido-purpuriis, ad apicin columnæ andrœcialis gracilis extrorsum insertis, et cum tribus rudimentis similiter sitis perbrevibus simplicibus obtusis crassiusculis albis obsolete papillosis alter-

nantibus; rudimento stylino nullo; spicis longissimis flexuosisque, ovario glabro; staminibus sterilibus tribus, minutis; columna stylina crassa, lobis perianthii dimidio breviori, apice non ramoso, sed in lobos trias expanso, lobis crassis, divaricatis, versus marginos rotundatos subito reflexis, versus axem stylinum valde conduplicatis; seminibus 3—4 in quoque loculo, undique (sed facie interiori anguste) alatis.

Caulis 1.5—2 mm. in diametro. *Folia* tenuiter membranacea, 4—6.5 cm. lata, cordata. *Petioli* 2 cm. longi. *Racemi* 1.5 dm. longi. *Pedicelli* graciles, 1.5—2 mm. longi, 4—10 mm. distantes. *Perianthium* rotato-campanulatum, circiter 4 mm. latum, lobis ovatis obtusisque. *Columna androecialis* brevis, lobis perianthii ad maximum dimidio brevior. Antheræ oblongæ, fusco-purpureæ. Spicæ pistillatæ sæpe plus quam 6 dm. longæ. *Flores* 1.5—2 cm. distantes. *Ovarium* gracile, apice attenuatum (flores stipitati). *Capsula* oblonga, 1.5 cm. lata, 2.3 cm. longa. Semina valde compressa, usque ad 4—5 mm. longa lataque.

Yucatan, GAUMER, 794, type in Herb. Field Col. Mus. cat. no. 36597, staminate form; 928, type in Herb. Field Col. Mus. cat. no. 37276, pistillate form. Referred in Field Col. Mus. Bot. 1: 357 to *D. macrostachya*.

Dioscorea Yucatanensis Uline, n. sp.

Planta gracillima glabra sinistrorsum volubilis caulibus filiformibus, foliis parvis, proximatis, cordatis, brevipetiolatis; spicis staminatis solitariis, folium multo superantibus, floribus minutis, sessilibus, subsolitariis perianthii lobis membranaceis, *oblongis;* staminibus tribus brevibus subcentralibus, cum tribus rudimentis brevioribus spatulatis alternantibus; antheris introrsis, minutis; rudimento stylino nullo; spicis pistillatis paucifloris, demum foliis duplo longioribus; staminibus sterilibus tribus, cum tribus minutissimis alternantibus; columna stylina brevi, ramis gracilibus, teretibus, decurvatis.

Caulis in plantis siccis 0.5 mm. diametro. *Folia* 3—4 cm. distantia, membranacea, orbiculari-cordata, 7-nervia. Petiolum 1—5 cm. longum. *Flores* staminati sordido-purpurei, marginibus viridibus, usque ad rachidis basin irregulariter et proximate inserti. *Perianthium* 1.5 mm. latum. *Stamina* erecto-divergentia, brevia, perianthii tubum vix superantia. *Spica* pistillata brevis, 7–10-flora. *Ovarium* breve, glaber. *Capsula* (immatura) 5 mm. longa.

Yucatan, GAUMER, 927, *ex parte*, staminate form; type in Field Col. Mus. Herb. cat. no. 37275; 1120, *ex parte*, pistillate form; type in Field Col. Mus. Herb. cat. no. 38477.

The general appearance of this plant, the disposition of its minute sessile flowers on the rachis, and especially the presence of minute spatulate rudimentary stamens, alternating with the short extrorse fertile stamens, all point unmistakably to a real relationship to *D. polygonoides* H. & B.; but it is at once distinguished in general by its delicate slender habit. It probably does not attain a length of more than 4 or 5 feet, for it was found growing on Capraria biflora, not spreading from plant to plant, but attaining its growth largely on a single individual. The staminate plant is readily distinguished from *D. polygonoides* by solitary flowers. The latter species always has its staminate flowers more or less densely bunched at irregular distances on the rachis. It will be seen also that the anthers are not discrete as in *D. polygonoides*, but irregularly introrse. The oblong perianth-lobe, in contrast to the usually orbicular form present in *D. polygonoides*, also serves to confirm the distinctness of the species. Though no mature capsules have been seen, yet the short few-flowered rachides of the pistillate specimen, and its short ovaries, some of them already as broad as long, suggest a very different plant from *D. polygonoides*, with its long rigid rachis and large capsules.

Dioscorea Matagalpensis Uline in Engl. Jahrb. xxii, 3: 432.

Forma staminata nova: Facies ut in planta supra citata, in sicco nigrescens, floribus in glomerulos 3—4 floros inæquidistantes dispositis; perianthii lobis ovato-oblongis, obtusis, æqualibus; staminibus fertilibus tribus cum tribus sterilibus spatulatis inæqualiter bidentatis obscuro papillatis alternantibus omnibus in tubo supra basin insertis; antheris parvis, surso-extrorsis, loculis vix discretis; rudimento stylino nullo.

Caulis gracillimus, sinistrorsum volubilis. *Folia* usque ad 3 cm. longa lataque. *Spicæ* 10 cm. longæ, simplices vel ramosiusculæ. *Perianthium* 1.5 mm. latum, segmentis basi nunquam auriculatis. *Stamina* fertilia brevia, segmentis perianthii fere dimidio breviora, sterilia paullo superantia.

Yucatan, Gaumer, 1391, staminate form. Specimen in Field Col. Mus. Herb. cat. no. 57320.

From the entire appearance of the plant and, as was to be expected, the presence of staminodia alternating with the fertile stamens, there can be no doubt that this is the hitherto unknown male form of *D. Matagalpensis*. Its discovery is especially fortunate, for it is now possible to determine the affinities of *D.*

Matagalpensis,—otherwise impossible from pistillate characters alone. It is found to fall very near to *D. polygonoides* H. & B., and its related forms, but differing essentially in its oblong perianth lobes, which are not at all auriculate, as is always true of *D. polygonoides*, in the entire absence of style rudiment, and in the attingent (not discrete) loculæ of the anthers. Furthermore, the plant is in every way smaller, with much smaller leaves, slenderer stem, and shorter spikes.

AMARANTHACEÆ.

During the last decade many new forms of this family have been described from Mexico, Central America and the West Indies, these being chiefly Iresines from Mexico and Central America, and Alternantheræ *resp.* Telantheræ from the West Indies. However, a careful study of the specimens in the herbarium at Field Columbian Museum reveals the fact that several forms have nevertheless been overlooked. Owing to the great confusion existing so generally throughout the group, it is with no little hesitation that I undertake to add to the already long list of known and little known species; yet there are certain facts, as will be seen below, pertaining to the relationships of the plants in hand, which seem to sufficiently justify publication.

Alternanthera Morongii Uline, n. sp.

Planta prostrata caulibus herbaceis, radicantibus, ramosissimis, ad articulos plus minus lanatis; foliis glabris longiuscule petiolatis, obovatis vel oblanceolatis, apice rotundatis, leviter mucronatis; capitulis sessilibus, solitariis vel 2—3-ternis, ovato-oblongis vel globosis; floribus minutis, glabris, sepalis membranaceis, hyalinis exterioribus obscuro trinerviis; cupula brevissima, staminodiis subintegris, quam filamentis multo brevioribus; ovario globoso-compresso, stylo subnullo.

Caules crassi, usque 1.5 mm., ad nodos sæpe radiculiferi, superne pilosiusculi, pube simplici, inferne glabrescentes, in axillis lanati, internodiis brevibus (1—2.5 cm.). *Folia* opposita utrinque glabra, alterum sterile alterum fertile, 1—2 cm. longa, basi in petiolum attenuata. *Capitula* 4 mm. diametro, densiflora; rachis inter flores subglabra; bracteæ oblongæ, apice acutæ (nec aristatæ), 1 mm. longæ, glabræ. *Flores* dorso convexi, ventre plani. *Sepala* exteriora ovato-oblonga, acuta, interiora augustiora, later-

PL. XXIII. ALTERNANTHERA ASTEROTRICHA ULINE.

1. Portion of plant showing habit. (Pubescence not indicated in the drawing.)
2. Single hair taken from leaf.
3. Sac e taken from « pal.
4. Andrœcial tube laid open, showing stamens and staminodia.
5. Ovary.

(See page 419.)

PL. XXIII. ALTERNANTHERA ASTEROTRICHA ULINE.

1. Portion of plant showing habit. (Pubescence not indicated in the drawing.)
2. Single hair taken from leaf.
3. Same taken from sepal.
4. Androecial tube laid open, showing stamens and staminodia.
5. Ovary.

(See page 419.)

ALTERNANTHERA ASTEROTRICHA, Uline.

alia plicato-concava, omnia glaberrima, æquilonga (2 mm.). *Staminodia* acuminata, simplicia vel in lacinias 2 dissecta. *Filamenta* capillacea, staminodiis 4—5-plo longiora.

Central Paraguay, Morong, 40. Distributed from Herbarium Columbia University as *Alternanthera Achyrantha* [*A. repens* (L) Kuntze]. Type in Field Col. Mus. Herb. cat. nos. 18150, 18151.

The nearest affinities of this plant are at once found in the widely distributed *A. paronychiodes*, which it resembles very closely in its dense prostrate habit, wool in the axils of the small oblanceolate leaves, small white heads, and in its stamineal tube characters. The heads are smaller and more densely flowered, and the flowers are much smaller and *glabrous*, there being no hairiness whatever within the inflorescence; though the heads, like *A. paronychiodes*, are more or less enveloped at the base by white simple, wooly pubescence. The stamineal cup is smaller, filaments longer and decidedly slenderer, and the seed little more than half the size of that of *A. paronychiodes*.

Alternanthera (Telanthera) **asterotricha** Uline, n. sp. (Pl. XXIII.)

Procumbens caulibus crassis subgeniculatis, ad nodos radiculas sæpe gerentibus, versus apicin adcendentibus, superne pube densissima grisea vestitis, pilis basi irregulariter ramosis; foliis ovali-ellipticis, basi in petiolum gradatim contractis, apice rotundatis, mucronulatis, supra laxius subtus densius pilosis, pilis ramosis, capitulis minutis, in axillis foliorum juniorum sitis; bracteis acuminatis, sepalis paullo brevioribus, sepalis exterioribus trinerviis, lateralibus plicatis, omnibus dense patenti-pilosis, pilis spinuligeris, staminodiis filamentis æquantibus, apice in lacinias 5 dissectis, ovario globoso-obconico, stylo brevi.

Caules crassi (2—2.5 mm.), internodiis 5—10 cm. longis. *Folia* usque ad 6 cm. longa, breviter petiolata. *Pubis* plantæ totæ ramosa, ramis simplicibus, setiformibus vel longiusculis, ramosis et divaricatis, haud verticillatis. *Flores* 2.5 mm. longi, 2 mm. lati, sepalis exterioribus valde nervatis, interioribus plicatis, carinatis, omnibus breviter aristatis, dorso pilosis, pube spinulifera. *Tubus staminealis* (¼ alt. filamentorum), filamentis staminodiisque ovarium et stylum æquantibus.

Yucatan, Gaumer, 1303. Type in Field Col. Mus. Herb. cat. no. 57232.

The singular pubescence of this plant gives to it its most prominent specific character. The hairs of the sepals are simple

with short spinulous processes standing out on the sides. Those of the leaves and stems, on the other hand, are branched at the base, the branches again often subdividing. The main axis of the hair, which is spinuliferous like those of the inflorescence, seems to rise from a basal cluster or network of irregularly disposed branches, while these branches in turn become spinuliferous. Dr. Urban,* who recently described four new species of *Telanthera* (*Alternanthera*), three of which seem from the description to be very near the above plant, does not mention any other than simple pubescence on the leaves, though in describing the stem-pubescence of *T. Sintenisii* he says "pube inferne *verticillatim* ramulosa et præterea minute spinuligera." But our plant comes from a very different region biologically, and reveals characters which clearly justify specific separation. The leaves of the above plant are very much larger than in *T. Sintenisii*, and are oval (not rotund), the latter being only 1.5—2 cm. long and wide; the branches of the hairs are never verticillate, but always irregular, both in size and position.

Alternanthera Culebrasensis Uline, n. sp.

Prostrata caulibus gracilibus, radicantibus, præcipue superne pube densa appressa vestitis; foliis rotundatis breviter pedecellatis, supra (nisi junioribus) glaberrimis, subtus densius pilosis, pilis caulium foliorumque verticillatim ramulosis; capitulis ovatis, desifloris sessilibus, solitariis vel binis; sepalis dorso pilosis, pilis setigeris, exterioribus trinerviis, interioribus plicato-carinatis, omnibus brevissime aristatis quam bracteis 2-plo longioribus; staminodiis filamenta fertilia æquantibus, usque 5-laciniatis, filamentis in ½ altitudine coalescentibus.

Caules vix 1 mm. diametro, internodiis 3–6 cm. longis. *Folia* 1.5—2.5 cm. longa lataque, basi sæpe inæquilatera, membranacea, in sicco læte virida, in axillis cristas lanosas gerentia. *Capitula* 4—6 mm. longa. *Flores* 3 mm. longi, 2 mm. lati. *Antherarum thecæ* lineari-lanceolatæ.

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*Symbolæ Antillanæ, Vol. I, p. 301.

Contrary to the common acceptation of the present limits of the genus *Alternanthera*, which is made by Bentham, Grisebach, Schinz, Kuntze and others to include *Telanthera excl. Lithophila*, and *Mogiphanes*, Dr. Urban has published his new species under the old *Telanthera*. However, the merging of these two genera seems in the opinion of the writer to be justifiable on the ground that it is impossible to lay hold of any pervading character that can logically separate them. Both have simple capitate stigmas, stamens coalescent, and a tube with flat, simple or dentate to laciniate staminodia of varying lengths. On account of this latter character, the old division, based as it was on relative length of stamineal tube and staminodia, falls away. The writer prefers to relegate the transfer of Dr. Urban's species to the hands of the ever active botanical nomenclator.

Culebras Island, south shores, Millspaugh, Pl. Utowanæ, Armour Exped. no. 607. Type in Field Col. Mus. Herb. cat. no. 60607.

Nearer *A.* (*Telanthera*) *Sintenisii* Urban *l. c.* than the preceding, but the pubescence on the leaf of the latter is described as "supra laxius subtus densius pilosis," upon which rests the chief difference of the above species. It may prove to be only a variety—a question which only a comparison of the two plants can decide.

Alternanthera Lorentzii Uline, n. sp.

(*A. Achyrantha* Moq.? *l. c.* 358, *non* R. Br.)

Prostrata caulibus crassis, ad nodos radiculas gerentibus, glabris (nisi junioribus parce pilosis); foliis crassis, glabris rotundatis vel obovatis, apice rotundatis mucronulatis; capitulis spinosis majusculis, 2—5-nis in axillis foliorum, bracteis acuminatissimis, sepalum interiore æquantibus, sepalis exteroribus 2 divergentibus, longissime aristatis, lateralia interioreque multo superantibus; tubo stamineali brevissimo, staminodiis perbrevibus 2–3-dentatis, filamentis fertilibus, gracilibus, staminodia multo superantibus.

Caules 2—2.5 mm. diametro, internodiis 2—6 cm. longis. *Folia* 1.5—2.5 cm. longa, breviter petiolata. *Capitula* ovata, usque 1 cm. longa. *Sepala* 2 exteriora longissime aristata, glabra, 5 mm. longa demum devaricata; interiore lanceolato-acuminatum, 3 mm. longum, glabrum; lateralia 2 minora 2.5 mm. longa, angustiora, valde plicato-carinata, dorso pilosa, pilis glochidiatis barbatisque.

Uruguay, Concepcion del Uruguay, Lorentz in 1878. Type in Field Col. Mus. Herb. cat. no. 54626.

The question arises as to what is really known about R. Brown's *A. Achyrantha.* If the evidence of scores of herbaria is good, it is quite safe to accept those Alternantheras having short simple staminodia equaling the filaments, so generally distributed over North and South America from South Carolina to Brazil, as the correct interpretation. But this comparatively well-known plant differs radically from the above-described Lorentz plant, as follows: leaves and head smaller, sepals all more or less provided with the glochidiate barbed hairs above described, but the two dorsal exterior ones not conspicuously aristate; staminodia simple, very short, equaling the filaments. Since Moquin-Tandon seems to have mixed the description of a similar plant to the

above in his description of *A. Achyrantha*, I have referred it here with question.

Iresine Hartmanii Uline, n. sp. (Plate XXIV.)

Erecta suffruticosa, caulibus ramosis, superne lanato-puberulis, inferne glabris; foliis oppositis (inferne alternis), oblongo-lanceolatis, apice acuminatis, basi acutis, supra obsolete puberulis vel glabrescentibus, subtus densius griseo-pilosis, paniculis laxis; floribus in spicas densas crassas dispositis, quibus alternis in paniculis ad ramos secundas tertiasque sitis; fl. staminatis lanosis, antheris oblongis, staminodiis subnullis.

Caules robusti, suffruticosi. *Folia* usque ad 8 cm. longa, 2 cm. lata. *Petiolum* 5—10 mm. longum. *Rami* panicularum late divergentes, inferne oppositi, superne alterni, ramulis alternis. *Spicæ* usque ad 8 mm. longæ, 3.5 mm. diametro, albido-lanatæ, terminalibus pedunculatis, lateralibus plerumque sessilibus. *Ovarium* rudimentum depressum, stylo nullo, stigmatibus 2. *Staminodia* fere obsoleta.

Sonora, Mex., Granados, alt. 3,000 ft., in 1890. HARTMAN, 232, staminate form. Type in Field Col. Mus. Herb. cat. no. 49593.

Distributed as *Iresine Schaffneri*, but clearly distinct in habit and in the absence of staminodia. In general appearance it suggests *Dicraurus leptocladus*, and the fact of some of the lower leaves of the branches being alternate seems to confirm the relationship; but the species of *Dicraurus* have papillate staminodia. The rudimentary ovary is so large that the plant was first taken to be hermaphrodite, but in no case could I find even the beginnings of seed ripening, though many of the flowers were past the stage of anthesis. I conclude, therefore, that the functional pistillate form has yet to be found, this specimen being the staminate form, and constituting a reduction from an earlier hermaphrodite condition—a state of things well known in numerous other members of the genus. Its shrubbiness, pubescence, dense spicules and much reduced staminodium serve to easily distinguish it.

Pl. XXIV. Iresine Hartmanii Uline.

1. Portion of plant showing habit; remnants of flower-bearing branches at the forking.
2. Portion of androecial tube showing stamen and minute staminodium.
3. Rudimentary ovary.
4, 5. Under and upper surface of leaf indicating relative pubescence.
6. Head, enlarged, showing arrangement of flowers.
7. Individual flower, much enlarged.

(See page 422.)

IRESINE HARTMANII, Uline.

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BOTANICAL SERIES. VOL. I, NO. 6.

PLANTÆ INSULÆ ANANASENSIS

A CATALOGUE OF PLANTS COLLECTED ON THE ISLE OF PINES, CUBA, BY DON JOSÉ BLAIN.

BY

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